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ZOOLOGICAL ABSTRACTS

Craighead, F. C. Direct sunlight as a factor in forest insect control. *Proc. Ent. Soc. Washington,* **22**, 106–108. 1920.

Working with mesquite and ash logs he found that the subcortical temperature on the upper side of these logs exceeded the fatal temperature of insects working in the logs. The application of this principle in the control of insects working in logs is recommended. S. A. Graham.

Craighead, F. C., and Loughborough, W. K. Temperatures fatal to larvae of the red-headed ash borer, as applicable to commercial kiln-drying. *Jour. Forestry,* **19**: 250–254. 1921.

In all tests above 128° F. with 100 percent relative humidity the borers were killed in from 1 to 2 hours. Four hours at 120° F. and 16 hours at 116° F. killed 50 percent of the larvae. Nineteen hours at 120° F. killed all the larvae. 100 percent mortality was secured in 45 hours at 116° F. and 70 hours at 110° F. Submergence in hot water gave the following results:

10 min. at 125° F. killed 50 percent; 1 hr., 75 percent.
30 min. at 120° F. killed 75 percent; 2½ hrs., 100 percent.

In dry air the experiments gave the following results:

10½ min. at 120° F. gave 100 percent dead.
5 min. at 122° F. gave 100 percent dead.
2 min. at 125° F. gave 100 percent dead.
2, 3, and 4 min. at 120° F. failed to kill.
16 min. at 118° did not kill nor did it cause cessation of activity.

In dry air all temperatures above 120° F. cause cessation of activity in two minutes. S. A. Graham.

Edmonson, Charles Howard. Protozoa of the Devil's Lake complex, North Dakota. *Trans. Amer. Micro. Soc.,* **39**, 167–198, pls. 18–19. 1920.

The salinity of the water of Devil's Lake amounts to approximately one percent at the present time, and is slowly increasing owing to the gradual recession of the lake by evaporation. This salinity seems to be responsible for a dearth of shell-bearing rhizopods and the absence of many common species of flagellates and ciliates. Otherwise the protozoan fauna of the lake is not unusual.

Experiments showed that the Protozoa inhabiting the lake can adjust themselves more readily to fresh water than the forms accustomed to fresh water can accommodate themselves to the saline water of the lake.

In all, 111 species were found in the lake: 13 species belonging to the Sarcodina, 22 species to the Mastigophora, and 76 species to the Infusoria. The proportion of species in the three groups corresponds favorably with that in a typical fresh-water lake.

One hundred and three species of algae have been found in Devil's Lake, of which five are typically marine forms. C. Juday.

Hurd, W. E. Influence of wind in the movement of insects. *U. S. Mon. Weather Rev.,* **48**, No. 2, 94–98. 1920.

A comprehensive review of the literature relating to the dissemination of adult and larval insects by wind. Twenty-three references are listed. S. A. Graham.

Juday, Chancy. The Cladocera of the Canadian Arctic Expedition, 1913–18. *Rept. Canadian Arctic Expedition, 1913–18,* Vol. VII, Part H, 1920.

The species of Cladocera listed in this report are from the shore of the Arctic Ocean (about 70° N. Lat.) in the general region of the mouth of the Mackenzie River. Entomostraca have frequently been collected from Greenland, Labrador, etc., on the east, and Alaska on the west, but the whole interior of Canada, from the southern boundary and northward, is almost an unknown region in regard to its entomostracan fauna. This report gives the first definite knowledge of the Arctic portion of this region.

Juday reports seven species of fresh-water and two of marine Cladocera. One of these, *Eurycerus glacialis,* is apparently confined to the Arctic regions; the others have wide distribution in all zones and are of no special significance here. G. S. Dodds.

Marsh, C. Dwight. The fresh-water Copepoda of the Canadian Arctic Expedition, 1913–18. *Rept. Canadian Arctic Expedition, 1913–18,* Vol. VII, Part J, 1920.

This report gives the first definite knowledge of the Copepoda of the Arctic portion of interior Canada. Thirteen species are listed. The list is of considerable interest, for while it contains certain cosmopolitan forms, as would be expected, it also includes others of special interest as part of Arctic faunas of other regions. G. S. Dodds.

Saunders, Aretas A. A distributional list of the birds of Montana, with notes on the migration and nesting of the better known species. *Cooper Orni. Club, Pacific Coast Avifauna,* No. 14. 194 pp., 35 figs., 1921.

Divides the State of Montana into six faunal regions: Southern Prairie, Northeastern Prairie, Northwestern Prairie, Southern Mountain, Northeastern Mountain, and Northwestern Mountain. In a preliminary classification of the bird associations the grass associations are divided into meadow, bench, and foothill; the water associations are divided into prairie lake, mountain lake, river, mountain stream, and cattail and tule marsh; the rock associations are not classified; the shrub associations are divided into willow thicket, sage-brush, wild-rose, and cinquefoil; the tree associations are divided into cottonwood grove, aspen grove, mixed broad-leaf and coniferous, yellow pine, lodgepole pine, white-bark pine, western white pine, Douglas fir, fir and tamarack, Englemann spruce, limber pine, and arbor-vitae; and the artificial associations are not classified. L. R. Dice.

Stefansson, V. Temperature factor in determining the age of maturity among the Eskimos. *Jour. Amer. Med. Assoc.,* 75, 669–70.

Eskimo girls of northern North America become mature at the early age of 10 to 13 years. These Eskimos, however, live during the winter in steamy houses kept constantly at a high temperature, and when they are outside they dress in very warm furs. They thus have a tropical or subtropical temperature in their personal environment, and their early maturity corresponds with that of races living in hot climates. On the contrary, the Dog Rib and Yellow Knife Indians of northern Canada do not mature earlier than north European whites, but the mode of life of these Indians is not well adapted to the climate, and they suffer much from the cold. L. R. Dice.